AMENDMENT

Please amend the above-identified application as follows:

In the claims:

1. (Currently Amended) A process for the production of physically foamed injection molded articles, wherein in a first stage a propellant-free first melt portion is fed into a cavity (initial filling), in a second stage adding a quantity of a physical propellant at elevated pressure to a second melt portion (propellant injection phase) and injecting the second melt portion containing the quantity of propellant into the cavity ~~(propellant injection phase)~~, and optionally in a third stage a propellant-free third melt portion is charged into the cavity, the production of the injection molded articles occurring in the cavity,

wherein metering of the quantity of the physical propellant in the second stage occurs in a pressure regulated manner, wherein the pressure which is exerted on the propellant during the propellant injection phase is greater than the pressure which is exerted on the propellant in the phases between or before or after metered addition, and the expansion of the quantity of the propellant added to the melt occurs in the cavity.

2. (Previously Presented) The process of Claim 1, wherein the propellant is a compressible fluid.

3. (Previously Presented) The process of Claim 1 further comprising the step of maintaining the propellant under pressure an intermediate cycle time before and after the propellant injection phase.

4. (Currently Amended) A process for the production of physically foamed injection molded articles, wherein in a first stage a propellant-free first melt portion is fed into a cavity (initial filling), in a second stage adding a quantity of a physical propellant at elevated pressure to a second melt portion (propellant injection phase) and injecting the second melt portion containing the quantity of propellant into the cavity and optionally in a third stage a propellant-free third melt portion is charged into the cavity, the production of the injection molded articles occurring in the cavity;

wherein metering of the quantity of the physical propellant in the second stage occurs in a pressure regulated manner, wherein the pressure which is exerted on the propellant during the propellant injection phase is greater than the pressure which is exerted on the propellant in the phases between or before or after metered addition, and the expansion of the quantity of the propellant added to the melt occurs in the cavity including maintaining the propellant under pressure an intermediate cycle time before and after the propellant injection phase;

~~The process of Claim 3, further comprising~~ maintaining the propellant at a pressure of at least p (crit) at a given temperature during the intermediate cycle time.

5. (Previously Presented) The process of Claim 1, further comprising the step of controlling the pressure exerted on the propellant via a pressure control valve.

6. (Previously Presented) The process of Claim 5, wherein the pressure control valve is a multi-way valve.

7. (Previously Presented) The process of Claim 6, wherein the multi-way valve is a 3/3-way proportional valve or a 2/3-way proportional valve.

8. (Previously Presented) The process of Claim 1 further comprising the step of controlling the pressure of a critical propellant via at least one pressure relief valve connected downstream of the pressure control valve.

9. (Previously Presented) The process of Claim 8, wherein at least one of the pressure relief valves has a holding pressure equal to or higher than the pressure at which a critical propellant is held in an intermediate cycle time.

10. (Previously Presented) The process according to Claim 1 further comprising the step of regulating the pressure preset by the pressure control valve via one or more pressure relief valves to the injection pressure at which the propellant is added to the second melt portion via an injection point.

11. (Previously Presented) The process of claim 1, wherein the injection point is configured as a throttle means.

12. (Previously Presented) The process of Claim 11, wherein the injection point is in the form of a defined gap in an injector or of an injector with a sinter metal.

13. (Previously Presented) The process of Claim 11, wherein the injection point is configured as a controlled closure mechanism.

14. (Previously Presented) The process of Claim 1 further comprising the step of using water as the propellant.

15. (Previously Presented) The process of Claim 1 further comprising the step of using a gas or gas mixture as the propellant.

16. (Previously Presented) The process of Claim 15, further comprising the step of using carbon dioxide as the propellant.

17. (Currently Amended) A process for the production of physically foamed injection molded articles, wherein in a first stage a propellant-free first melt portion is fed into a cavity (initial filling), in a second stage adding a quantity of a physical propellant at elevated pressure to a second melt portion (propellant injection phase) and injecting the second melt portion containing the quantity of propellant into the cavity and optionally in a third stage a propellant-free third melt portion is charged into the cavity, the production of the injection molded articles occurring in the cavity;

wherein metering of the quantity of the physical propellant in the second stage occurs in a pressure regulated manner, wherein the pressure which is exerted on the propellant during the propellant injection phase is greater than the pressure which is exerted on the propellant in the phases between or before or after metered addition, and the expansion of the quantity of the propellant added to the melt occurs in the cavity of using a gas or gas mixture as the propellant;

~~The process of Claim 16,~~ wherein the ~~carbon dioxide~~ gas or gas mixture is held in an intermediate cycle time at a pressure of at least 60 bar.

18. (Currently Amended) A process for the production of physically foamed injection molded articles, wherein in a first stage a propellant-free first melt portion is fed into a cavity (initial filling), in a second stage adding a quantity of a physical propellant at elevated pressure to a second melt portion (propellant injection phase) and injecting the second melt portion containing the quantity of

propellant into the cavity and optionally in a third stage a propellant-free third melt portion is charged into the cavity, the production of the injection molded articles occurring in the cavity;

wherein metering of the quantity of the physical propellant in the second stage occurs in a pressure regulated manner, wherein the pressure which is exerted on the propellant during the propellant injection phase is greater than the pressure which is exerted on the propellant in the phases between or before or after metered addition, and the expansion of the quantity of the propellant added to the melt occurs in the cavity

~~The process of Claim 1~~ further comprising the step of elevating the pressure of the propellant during the propellant injection phase to a pressure of over 60 bar using [the] a pressure control valve.

19. (Previously Presented) The process of Claim 1 further comprising the step of generating a counterpressure in the cavity.

20. (Previously Presented) The process of Claim1, wherein the physically foamed injection molded article is selected from the group consisting of a handle, a knob, a gearshift knob, a steering wheel casing, a ball, a sphere, a fender, a float and a closing means for bottle-like containers.

21. (Currently Amended) A device for the discontinuous metered addition of physical propellants to a foamable melt, comprising:

a storage means, in which the propellant is stored under pressure,

a pressure control valve for regulating the propellant pressure, and

an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein a controlled closure mechanism is provided at the injection point, and the controlled closure mechanism opens upon an increase in pressure exerted on the propellant upstream of the controlled closure mechanism above its holding pressure.

22. (Previously Presented) The device of Claim 21, further comprising at least one pressure relief valve.

23. (Previously Presented) The process of claim 1, further comprising the step of:

maintaining the propellant in a compressed state in an intermediate cycle time before and after the propellant injection phase.

24. (Currently Amended) A device for the discontinuous metered addition of physical propellants to a foamable melt, comprising:

a storage means, in which the propellant is stored under pressure,

a pressure control valve for regulating the propellant pressure, and

an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein at least one pressure relief valve is provided before the injection point, and the pressure relief valve opens upon a pressure increase exerted on the propellant upstream of the pressure relief valve above its holding pressure.

25. (Previously Added) A device for the discontinuous metered addition of physical propellants to a foamable melt as set forth in claim 1, comprising:

a storage means, in which the propellant is stored under pressure,

a pressure control valve for regulating the propellant pressure, and

an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein a controlled closure mechanism is provided at the injection point, and the controlled closure mechanism opens upon an increase in pressure above its holding pressure.

Please add the following new claims:

26. (New) A process for the production of physically foamed, injection molded articles in a mold cavity, comprising the steps of:

in a first stage is an initial filling step, feeding a propellant-free first melt portion into the mold cavity;

in a second stage, in a propellant injection phase, concurrently injecting into the mold cavity a physical propellant maintained at an elevated pressure and a second melt portion;

metering the physical propellant in the second stage in a pressure regulated manner;

wherein the pressure which is directly exerted on the propellant alone during the propellant injection phase is greater than the pressure exerted on the propellant in the phases before and after said metering.

27. (New) The process of claim 26, wherein the step of concurrently injecting includes injecting at an injection point.

28. (New) The process of claim 27, wherein said injection point is upstream of said mold cavity.

29. (New) The process of claim 27, wherein said injection point is at said mold cavity.

30. (New) The process of claim 27, including providing a controlled closure mechanism at the injection point, the controlled closure mechanism opening upon an increase in pressure exerted on the propellant upstream of the controlled closure mechanism above its holding pressure.

31. (New) The process of claim 26 further comprising the step of elevating the pressure of the propellant during the propellant injection phase to a pressure of over 60 bar using an upstream pressure control valve.

32. (New) The process of claim 26 further including in a third stage, a propellant free third melt portion charged into the cavity.

33. (New) The device of claim 21 wherein the injection point for the propellant is upstream to the spray point x within the mold and the part of the feeder pipe between the injection point and the spray point x is designed such that premature expansion in volume of the propellant under pressure is avoided.

34. (New) The device of claim 24 wherein the injection point for the propellant is upstream to the spray point x within the mold and the part of the feeder pipe between the injection point and the spray point x is designed such that premature expansion in volume of the propellant under pressure is avoided.